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VARIOUS.

Antique Vessels.

The fragments and remains of ancient pottery have always furnished the antiquary with a rich source of information of every kind, and been a favourite branch of study. It will have been obvious, at a glance, to every one who has visited a museum, that the antique pottery is in reality of two kinds or qualities; viz., the one composed of a coarser, not particularly homogeneous mass, of coarse grain and very porous texture, and generally composing the vessels of very large dimensions; the other consisting of a very homogeneous, fine and much denser mass, to which the Etruscan vases and the more common vessels of *terra sigillata* belong.

To the first class, besides the lachrymal and cinereal urns from the graves of the ancients, belong more particularly the so-called *amphoræ*. These are gigantic vessels, often attaining the height of 8 feet by 3 feet in diameter, with a corresponding thickness in the body. The body is generally of a light color, but often black, soft, capable of being scratched with the knife, and contains a cement, often quartz-sand or sand composed of calcareous spar, to diminish the amount of contraction. Fragments of similar vessels (which were also known to the Celts) have been found in osseous caverns, under conditions and circumstances which refer them to a period very much anterior to the history of Rome or Greece.

The fine varieties of antique earthenware are always colored in the body: some are black, others of a dirty-red or brown-red, others again of a beautiful bright-red color *(terra sigillata)* like red sealing wax. These vessels are sometimes void of all exterior coating, and are smoothed on the surface previously to being thoroughly dried; or they are covered less frequently with a layer of lighter colored material, while the interior is composed of a dark colored clay: sometimes they are coated with a peculiar glaze-like substance; or, lastly, ornamented with flat designs upon the surface. These are either brown upon yellow ground, or black upon bright red, or *vice versa.*

The numerous analyses which have been made of fragments of Etruscan vases, have yielded from 60 to 69 p. c. silica, 12 to 16 alumina, 7 to 8 oxides of iron and manganese, 2 to 4 lime, and 2 to 3 magnesia; the substance, therefore, appears to have been formed from ordinary potter's-clay. The color of those specimens, which are black throughout, is due to $1^1/_2$ to 3 p. c. of carbon, derived from a smoking fire. These vessels have not all been fired, and when they have been put through that process, the heat employed has not been great; the moulding on the contrary, which has obviously been performed upon the potter's-wheel, is very perfect, and figures in relief, obtained from clay moulds, are also of frequent occurence. The vessels prepared from *terra sigillata* contain more oxide of iron, as much as $12^1/_2$ p. c., which accounts for their red color. The glaze-like surface of these red vessels is very little colored, remarkably thin, transparent, and composed of 64 silica, with 11 of oxide of iron and 20 soda. The black glaze is of very similar composition. It is quite impossible to specify whether these were obtained by means of salt or otherwise. The white castings which are sometimes met with upon red vessels consist of pure clay, containing no lime or magnesia, but a little iron. Designs in relief were also produced by castings. The coating of glaze upon the vessels, as they are met with in Magna Græcia, is a vitreous compound, containing a large quantity of iron; the black color of this thin layer of glaze which is very common, as well as the designs produced upon a light ground, is derived, according to Salvetat, from iron and manganese, and can be imitated.

Employment of Calcareous Tufa for the Production of a Fine, Artificial Marble.

The Calcareous Tufa or Tuff varies much in its texture, being sometimes compact, stalactitic, in form of hollow tubes, leaves, and moss, and often occurring as a spongy, loose, and porous kind of stone, of various tints, light grey, yellow, red, or brown, frequently enclosing fragments of grass, ferns, and herbs of modern origin.

Its fracture is uneven, granular, earthy, opaque, dull, soft.

Consisting chiefly of carbonate of lime it generally derives its color from a casual intermixture of more or less oxide of iron.

It occurs near limestone-rocks, and is formed, sometimes before our eyes, by deposits from springs and streams which quickly incrust any object immersed in them, depositing on it the lime they hold in solution.

Calcareous tufa is frequently met with, and constitutes an excellent material for building purposes; being a bad conductor of heat it forms very dry and warm walls; but must not be used for masonry when moist or fresh from the quarry, as frost might cause it to burst. The softer and porous kinds of tufa may be worked by sawing or cutting, but cannot resist any great amount of pressure, for which reason, especially for vaults, piers etc., it ought to be employed with great precaution.

The following process will however greatly increase its hardness, serving at the same time for the production of a fine artificial marble of any intended tint and color.

For this purpose the tufa, after being sawn into slabs or blocks of the required size, and exposed to the air for some time in order to dry, receives a first polish from suitable implements or materials, in order to produce a perfectly even surface; after which, according to the desired tint, the color is applied on the polished tufa by rubbing it into the pores or interstices with a dilute solution of soluble glass, (water glass) rendering as exactly as possible the character of the veining. When the mixture appears perfectly dry the surface is twice brushed over with a dilute coat of soluble potash glass, after which the slabs or blocks are allowed to dry again. In fact by this process an insoluble silicate of lime is formed, rendering the stone almost as permanent and hard as granite.

When the slabs are sufficiently dried they receive a second high polish in the usual way, after which they are again coated over with a concentrated solution of the potash glass, of a specific gravity from 1.20 to 1.25.

After the drying of this last coating the stone to treated will bear the most brilliant polish, showing altogether the characteristic properties of polished marble of superior quality; and can now be employed for facing walls, columns etc., in the same manner, and in fact for all the different purposes for which real, polished marble is used.

We may add that slabs of great beauty, brilliancy of color, and perfection of marking have been obtained by adding a little bronze at different places, after having applied the colors, and in connection with them.

As to the permanency of polish in the stone so treated, and its resistance to the destroying influence of the atmosphere, we can speak most positively. Having for several years given great attention to this point, and having subjected specimens of this factitious marble to every test of change of temperature, moisture etc., we have found neither the polish in any degree affected by them, nor the specimens themselves at all deteriorated by their influence.

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